UK RESPONSE TO THE CONSULTATION ON A DRAFT GLOBAL ACTION PLAN TO ADDRESS ANTIMICROBIAL RESISTANCE

GENERAL QUESTIONS

1. From the perspective of your organization, what are the most important areas of concern in AMR?

   Improving antimicrobial stewardship including optimisation of antimicrobial prescribing in human and animal health sectors and infection prevention and control.

   Development of new business models for bringing new antibiotics to market.

   Improving the AMR evidence base through improved (cross-border) research and surveillance.

2. Is your organization currently involved in work related to AMR? Y__ N__

   Yes

   If Yes, How?

   The UK has developed and published a five year national strategy for addressing antimicrobial resistance, taking a “one health” approach - https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018. The Strategy is being implemented over a 5 year period and the first annual report and an implementation plan will be published in November 2014.

   Recognising the need for measurement, in June 2014 the UK published its metrics that will be used to assess the impact of the Strategy. These measures include indicators of trends of resistance in key infections and in antibiotic prescribing https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/322358/Outcome_measures.pdf.

   The UK is leading (alongside Sweden, the Netherlands, Germany and Canada) the Action Package on AMR as part of the Global Health Security Agenda (GHSA). This work includes a package of activities to improve knowledge and understanding of AMR and aims to support countries in implementing national plans, aligned with the developing Global Action Plan.

QUESTIONS ABOUT THE DRAFT GLOBAL ACTION PLAN OUTLINE DOCUMENT

1. How would you rate your understanding of WHO’s intention in the development of a global action plan to address AMR?

   Very Good

2. From the perspective of your organization, are the major issues relating to AMR outlined in the draft global action plan? Y__ N__

   Yes
QUESTIONS ON THE ‘BUILDING BLOCKS’ DESCRIBED IN THE DRAFT OUTLINE.

The responses to the questions below have been produced in collaboration with other Government Departments, the Devolved Administrations and Public Health England who are all involved in supporting and implementing the UK-wide AMR Strategy. Each administration are developing their own AMR delivery plan to support the UK wide AMR strategy and are working closely together to ensure coordination at strategic, tactical and operational levels. We have also included an Annex of key documents developed in the UK, focused primarily on infection prevention and control and stewardship that may be of assistance.

Detailed comments on the building blocks are provided below but we would like to highlight two key recommendations for inclusion in the GAP:

- The WHO GAP should encourage the establishment of a global antibiotic awareness campaign.
- The GAP ‘champions’ should encourage efforts to change behaviour in prescribing practice (particularly antibiotic prescribing).

In addition, we fully support the aspiration of the GAP to enable all countries to demonstrate progress. The GAP therefore needs to focus on key public health measures such as strong infection prevention and control measures. However, whilst recognising that counties are coming from different starting points, it needs to remain focused on specific measures to reduce the spread of resistance.

Agreeing the governance arrangements, such as who has the responsibility and accountability for overseeing and delivering progress, will need to be set out in the GAP. In the UK we have set up a High Level cross government Steering Group (HLSG) with responsibility for driving implementation of the Strategy (see page 28 of Strategy) which reports to the Chief Medical Officer, Chief Veterinary Officer and Ministers.

Key stakeholders include all Government Departments not just health and agriculture departments, regulators, research bodies and those setting curricula and training programmes. In addition, patients, the public, industry, NGOs, learned societies and professional bodies, health professionals, infection specialists, trade associations, academia, teachers, farmers, food producers and retailers also have a role. Key stakeholders are shown next to the bullets but these lists are not exhaustive.

I. Building block-1: Increasing awareness and understanding about AMR and of the actions and changes needed

a) What do you consider to be the main issues under this priority?

Improving professional education, training and public engagement to improve clinical practice, and promoting understanding of the need for more appropriate use of antibiotics to ensure a sustainable supply.

b) What are the main actions that needs to be done -- and who are the main actors/stakeholders who need to take action -- to go beyond the status quo?
Internationally, we consider one of the essential actions needed is the significant strengthening of the global 'one health' approach, with WHO working in conjunction with FAO and OIE to secure resolutions mirroring the WHA AMR Resolution of 2014. *(Key stakeholders: WHO FAO OIE)*

Facilitating public debate to shift societal views so that the public and animal keepers do not expect antibiotics for all illnesses and, when they are prescribed, only use them when required. We consider this to be fundamental and a precursor to changes in clinical practice. We need to move to a position where antibiotics are perceived as a valuable resource for public good with everyone understanding the need to protect them and acting to avoid their overuse. *(Key stakeholders: Government, learned societies and professional bodies, thought leaders, philanthropic bodies, charities and third sector)*

Specific actions are needed to improve clinical practice. We would recommend that the GAP champions’ efforts to change behaviour in prescribing practice, including:

- Improving uptake of guidance, adherence to good practice and promoting shared learning to build capability and capacity *(Key stakeholders: learned societies and professional bodies)*.

- Training of health and non-health professionals e.g. farmers and other professionals with responsibility for dispensing and administering antibiotics *(Key stakeholders: educators responsible for curricula)*.

- Strengthening professional curricula and continuing professional development including encouraging the use of generic prescribing competences *(Key stakeholders: educators responsible for curricula, Government and bodies responsible for professional validation)*.

- We would recommend the WHO GAP encourages the establishment of a global antibiotic awareness campaign

c) What steps have already been taken to address this priority? (please provide references where possible)

European Antibiotic Awareness Days (EAAD) and other awareness raising initiatives have been carried out in the UK since 1999. UK EAAD activities include provision of on-line educational resources, social media work, editorials, articles and conferences for professionals. In 2014 on-line pledges for the public and professionals to become “antibiotic guardians” are being launched. For further information see:

- http://antibioticguardian.com/ for Online pledges

- European Antibiotic Awareness Day evaluation 2013

Generally these initiatives have been effective in raising awareness, improving knowledge and understanding of the issue but had less impact on changing behaviour.
d) What are concrete and measurable indicators of progress for this priority? (Including, for example, global and national goals to be achieved within 2, 5 and 10 years)

At a national level:

- Annual evaluation of the impact of initiatives such as European Antibiotic Awareness Day activities – national and global by 2017
- Surveys of use, knowledge and attitudes to antibiotics of public by 2017
- Auditing use of key guidance and providing examples of best practice and case studies by 2017.

II. Building block-2: Identifying the most important approaches for preventing development of infections and the steps needed to move beyond guidance to more effective implementation of such approaches

a) What do you consider to be the main issues under this priority?

Improving infection prevention and control (IPC) in all sectors, including livestock production, to minimise risk of infection and introducing audit mechanisms to ensure that best practice is followed.

Where possible, this should include preventing the use of antibiotics in the veterinary sector as a growth promoter or a substitute for good hygiene and biosecurity

b) What are the main actions that needs to be done -- and who are the main actors/stakeholders who need to take action -- to go beyond the status quo?

Securing high level “political” support from government, senior management and professional bodies for tackling AMR as a priority issue in healthcare organisations and across the farming community. To achieve this we need to establish the appropriate healthcare infrastructure, which should include specialised IPC interdisciplinary teams comprising medical microbiologists, pharmacists, nurses, infection control nurses, medical directors and laboratory staff. (Key stakeholders: Government, learned bodies and professional societies, trade bodies, third sector, senior managers, vets and clinical leads).

Encourage a focus on infection prevention and biosecurity in livestock production (Key stakeholders: vets livestock industry Government).

Embedding infection prevention and control (IPC) into education of healthcare and veterinary teams (Key stakeholders: educators responsible for training and education and professional development including curricula, learned bodies and professional societies).

Ensuring adherence to evidence based guidance (Key stakeholders: regulators, prescribers, farmers, food industry livestock industry, trade bodies, retailers and clinical leads).

Promotion and development of vaccination programmes for infections in both medical and veterinary sectors e.g. vaccines for specific Gram negative infections. (Key stakeholders: Government, academia, industry, vets, farmers, healthcare professionals)
Sharing intelligence, including surveillance data on prescribing patterns in antibiotic use and resistance trends in key pathogens to trigger appropriate containment measures (Key stakeholders: Government, professional bodies, academia).

Disease eradication schemes (Key stakeholders: Government, medical profession, farmers, vets).

c) What significant work has already been done to address this? (please provide references where possible)

Extensive guidance and tools on IPC and antimicrobial stewardship to support best practice have been produced (see Annex). This has been compiled in England into the “Code of Practice for the prevention and control of infections” which is used by both healthcare providers and regulators to assess if providers meet required standards of cleanliness and infection control. This resource is being updated to strengthen the AMR antimicrobial stewardship elements (Key stakeholders: Government, regulators, learned societies and professional bodies, infection specialists, vets).

The UK has managed to substantially reduce MRSA and C. difficile infections in healthcare settings by reviewing and strengthening of technical support to improve IPC and performance management of centrally set objectives. This could be a useful example of best practice. Further details are given in Annex.

We are also undertaking work to develop a “composite” IPC indicator that can be included in a dashboard of key measures used to monitor performance of healthcare organisations. (Key stakeholders: Government, senior managers, infection specialists).

Hand hygiene has been actively promoted in the UK and globally and is a key measure to reduce infections. Effectiveness of hand hygiene can be audited using WHO’s own suite of tools for this purpose – http://www.who.int/gpsc/5may/hhsa_framework/en/ (Key stakeholders: Government, senior managers, infection specialists).

Herd health planning with vets and farmers working together to minimise disease through preventative healthcare, good animal husbandry and improved biosecurity (Key stakeholders: Government, vets, livestock industry, assurance schemes, food retailers).

Vaccination programmes and disease eradication schemes in the UK; work underway includes a vaccine and diagnostic platform for pig respiratory disease (Key stakeholders: Government, vets, industry and farmers).

d) What are concrete and measurable indicators of progress for this priority? (Including, for example, global and national goals to be achieved within 2, 5 and 10 years)

All the following should be feasible globally in five years:

- Develop, implement and audit national guidelines on IPC and antimicrobial stewardship by 2019
- Implement and audit hand hygiene measures by 2019
- Monitor changes in prevalence of selected diseases by 2019
III. Building block-3: Optimizing the use of existing antimicrobials for human and animal health and in agriculture

a) What do you consider to be the main issues under this priority?

Facilitating development and use in health and animal settings of reliable/robust, cheap and rapid point of care diagnostics to inform accurate prescribing decisions.

Ensuring effective stewardship of existing antimicrobials in both human and animal health sectors is vital, through better use of existing guidance and diagnostics, for healthcare and veterinary professionals.

Lack of regulation and enforcement of controls relating to the supply, administration and use of antibiotics in some countries, for example, their use as growth promoters and availability over the counter (OTC) for human use. Need to strengthen controls so access to antibiotics is restricted to prescribers trained in responsible use principles.

Increased accessibility at local, regional and national levels to up to date information (ideally real time data) on local resistance patterns to key pathogens to inform accurate prescribing decisions.

Regular review of prescribing policies to ensure are effective and in line with best practice and national guidelines to minimise development and spread of resistance at a local, regional and national level.

b) What are the main actions that needs to be done -- and who are the main actors/stakeholders who need to take action -- to go beyond the status quo?

Diagnostic technologies need to be developed to improve access to cheap reliable and rapid point of care products to support appropriate, prompt patient treatment (Key stakeholders: industry, academia, government, vets, clinicians).

Enhanced education in prescribing and administration of antibiotics (Key stakeholders: those responsible for curricula, professional bodies, microbiologists epidemiologists, pharmacists).

Auditing local prescribing practices and outcomes to assess impact of stewardship programmes (Key stakeholders: Government regulators, commissioners of healthcare, pharmacists, vets, public health teams).

Develop prescribing guidance that is accessible, comprehensive, evidence based and optimally conserves existing antibiotics. It should specifically provide advice on ensuring heterogeneity (diversity) of prescribing. This is an area which the Advisory Committee on AMR and Health Care Associated Infections (ARHAI) has been asked to advise UK policy makers on (Key stakeholders: Learned societies and professional bodies).

Appropriate control of supply and distribution, dispensing of antibiotics e.g. restricting or prohibiting over the counter (OTC) sales (Key stakeholders: government including regulators, vets, clinicians).
c) What steps have already been taken to address this priority? (please provide references where possible)

In UK no over the counter (OTC) sales of systemic antibiotics, and use of antibiotics for growth promotion in livestock production is prohibited in European Union.

Guidance and tools to encourage rational antimicrobial prescribing have been developed for use across the UK e.g. generic prescribing competences and tools to assess antimicrobial prescribing systems.

“The Code of practice on prevention and control of infections” used by both regulators and healthcare providers in England collates available guidance on antimicrobial stewardship. This is being updated and strengthened further.

Veterinary antibiotic use in the UK is controlled in accordance with EU wide regulation. Antibiotics are only available under veterinary prescription.

Vets are required to be members of the Royal College and have a professional requirement to use antibiotics appropriately, in order to maintain their right to practice.

Species specific prescribing guidance has been developed by a number of veterinary bodies, including the British Veterinary Association, (BVA), British Small Animal Veterinary Association (BSAVA), British Equine Veterinary Association, (BEVA), and the Pig Veterinary Society, (PVS). Detailed responsible use guidance for vets and farmers has been published by the Responsible Use of Medicines in Agriculture Alliance (RUMA).

Development of UK Government surveillance schemes to monitor veterinary antibiotic use, and antibiotic sensitivity in bacteria from animals in accordance with EU requirements.

Publication of data to increase transparency and encourage benchmarking / best practice. For example prescribing data from primary care is available for pharmaceutical advisers (generally specialist pharmacists) to use with GPs to improve prescribing and provide advice/feedback to GPs for benchmarking and continuous improvement purposes.

**Note: See Annex for further information.**

d) What are concrete and measurable indicators of progress for this priority? (Including, for example, global and national goals to be achieved within 2, 5 and 10 years) Within 5 years

Suggested measures:
- Monitor uptake of national guidance on stewardship across healthcare settings by 2018
- Monitor total use of antibiotics in primary care, secondary care and veterinary sector and particularly use of critically important antibiotics by 2017
- Monitor and audit uptake of prescribing guidance in healthcare and animal settings by 2017
- Restrict over the counter use (OTC) sale of antibiotics and ban use of antibiotics as growth promoters, in a way that can be easily enforced at the national and regional level by 2024

IV. Building block-4: Identifying and closing critical gaps in knowledge needed to address AMR

a) What do you consider to be the main issues under this priority?

Improving access to and use of surveillance data on prescribing, antibiotic use and trends in resistance in all sectors.

Better coordination and collaboration of research priorities across human and animal aspects.

Lack of information on the rate and mechanisms of transmission of resistance between animals, humans and the environment, and how significantly this contributes to overall burden of resistance in people.

Lack of harmonised data on what antibiotics are used and where in human and other sectors.

Limited data on prevalence of clinical resistance in animals.

b) What are the main actions that needs to be done -- and who are the main actors/stakeholders who need to take action -- to go beyond the status quo?

Linking clinical and laboratory data across healthcare to improve control of “very resistant” bacteria - see link to UK metrics in Annex (Key stakeholders: Government, infection specialists).

Identification of key drug bug combinations to be monitored to assess trends in the burden of resistance and inform interventions to control it (Key stakeholders: Government, public health authorities, infection specialists).

Linking of human and veterinary antibiotic consumption data so data sets are comparable (Key stakeholders: Regulatory Agencies, Public health and Agriculture authorities).

Improving standardisation of routine antibiotic susceptibility testing (Key stakeholders: Government, public health authorities, learned societies and professional bodies).
Facilitating increased and strengthened research collaboration across all sectors and greater use of private public partnerships (Key stakeholders: Government, research funders, industry, academia)

Collectively funding research to improve understanding of transmission of resistance and potential significance of ‘reservoirs’ of resistance (Key stakeholders: research funders, academia).

Using existing FAO mechanisms to encourage countries to develop joint surveillance on the use of antimicrobials in the animal health sector; improving antimicrobial resistance detection in laboratories, and raising awareness through greater use of the FAO’s One Health Consultation Tool.

Support international efforts to develop capability and capacity. Encourage countries to pool their resources, e.g. use existing FAO/OIE mechanisms to improve practice and develop similar arrangements to build capacity and capability in surveillance in human settings.

c) What steps have already been taken to address this priority? (please provide references where possible)

The UK has recently established a research funder’s forum to co-ordinate AMR research programmes and is actively collaborating in initiatives such as Innovative Medicines Initiative and EU Joint Programming Initiative on AMR - see Annex for UK research themes and link to National Institute for Health Research and new Health Protection Research Units.

The UK is developing a “twining” scheme where high income Commonwealth countries work with low and middle income countries to develop capacity and capability in areas such as surveillance and laboratory methodologies. This work is being led by Public Health England as is part of our commitments to the Global Health Security Agenda.

The UK contributes data to ESVAC, an EMA hosted EU wide data collection programmes on veterinary antibiotic sales/use:

The UK contributes data to EFSA for EU wide statutory surveillance programmes for resistance in commensal and zoonotic bacteria from livestock, (Salmonella, Campylobacter, commensal E. coli).

The UK is developing, in collaboration with experts from a number of EU Member States, a Target Pathogen Monitoring Programme designed to promote active monitoring of resistance trends in key veterinary pathogens.

Note: This area should be informed by outputs from the meeting to be held in Sweden in December 2014 on surveillance.
d) What are concrete and measurable indicators of progress for this priority? (Including, for example, global and national goals to be achieved within 2, 5 and 10 years)

Suggested measures:

- Identify key infections to be used to monitor trends in resistance by 2016
- Agree type of resistance data to be monitored by 2016
- Monitor and report on data on key infections and resistance data at national, regional and global level by 2019
- Monitor and report on total antibiotic consumption, and/or proportion of antibiotics such as carbapenems, cephalosporin and fluoroquinolones at a national regional and local level by 2018.

V. Building block-5: Developing an innovative and sustainable approach to develop and distribute critical products and technologies needed to address AMR

a) What do you consider to be the main issues under this priority?

*Market failure of developing new antibiotics*

No new class of antibiotics have been developed for over 25 years because of the low return on investment. The identification of a suitable sustainable business model to encourage antibiotic development needs to be addressed at an international level. There is a need for greater public-private support to enable new products including diagnostics and vaccines to be brought to market.

b) What are the main actions that needs to be done -- and who are the main actors/stakeholders who need to take action -- to go beyond the status quo?


Facilitating the development of diagnostics. This includes diagnostics for specific infections, point of care tests, exploring barriers to the use of diagnostics, identifying levers to support systematic adoption of new technologies, and considering the future role of new technologies like gene sequencing in routine care (Key stakeholders: Government, policy makers, industry academia).

Capability and capacity building activities including encouraging exchanges and training initiatives on susceptibility testing to promote development and dissemination of best practice in reporting. Support innovation by developing scientific infrastructure, for example
by encouraging MS to fund research fellowships, supporting training of scientists (Key stakeholders: Government, industry academia).

Ensure clinical trials are streamlined to be consistent between regulatory agencies and minimise resource required eg increased use of PK data (Key stakeholders: Government, regulators, industry).

c) What steps have already been taken to address this priority? (please provide references where possible)

The UK has recently announced The Review on AMR, to identify options for governments on how to resolve the market failure. Interim conclusions are expected to be published in the first half of 2015 before the final report in 2016.

Innovate UK has also been working with multiple stakeholders, including industry, to support innovation. Innovate UK is a co-funder of the recent Longitude prize promoted by the BBC and NESTA (National Endowment for Science Technology and the Arts). Six research issues had been identified and the public vote identified developing a new diagnostic for antibiotic resistant infections to be the most important - http://www.longitudeprize.org/challenge/antibiotics

The UK Research Councils have also recently sought proposals, which build on the expertise of the academic sector and link strongly with the private sector, across a range of areas, including accelerating development of new treatments and diagnostics.

Collaboration between the US and the EU through the Transatlantic Taskforce on Antimicrobial Resistance (TATFAR) has led to an increase in exchanging information, understanding of best approaches and practices, and developing peer relationships. The TATFAR mandate has been extended for an additional two years and they have recently released their progress report - http://www.cdc.gov/drugresistance/pdf/TATFAR-Progress_report_2014.pdf.

There is also work underway through EU Innovative Medicine Initiative to investigate options such as increased collaboration on target identification and use of pharmacokinetic data in clinical trials as well as developing a cross EU clinical trials platform. To date €431m has been committed to five AMR consortia across Europe with UK researchers involved in a number of these, more details can be found at http://www.nd4bb.eu/.

d) What are concrete and measurable indicators of progress for this priority? (Including, for example, global and national goals to be achieved within 2, 5 and 10 years)

Suggested measures:

- Number of countries and international bodies participating in UK led independent Review of Antimicrobial resistance in 2014 and 2015.
- To support at least one twinning exercise per year in each of the WHO Regions by 2017.
- Establishment of co-ordinated research programme including public private partnerships in each of WHO Regions by 2017.
VI. Building block-6: Assessing the long term economic, developmental and social costs and implications of AMR as a basis for sustainable investment and action

a) What do you consider to be the main issues under this priority?

We are encouraged that the OECD has developed a proposal to undertake work to assess the burden of antimicrobial resistance and would urge WHO to support this initiative, encouraging countries to pool resources to enable this work to be commissioned.

We also support the work proposed by the World Bank to estimate the economic impact of (a) existing resistance and (b) economic and human costs under future scenarios. We would urge WHO to show its support for this work and encourage Member States to contribute to pooled funding.

Currently there is no model that articulates the economic impact of AMR on livestock production, showing the true cost of using antibiotics (over and above the point of purchase price) in place of preventative healthcare/husbandry/biosecurity. Without this model, it will be difficult to engender behaviour change in livestock production. We would urge WHO to press OIE to undertake this work as a priority in collaboration with others.

b) What are the main actions that needs to be done -- and who are the main actors/stakeholders who need to take action -- to go beyond the status quo?

We see value in collaborating with international agencies to pool resources globally, to support work to assess the economic burden of AMR.

c) What steps have already been taken to address this priority? (please provide references where possible)

The extremely limited number of new antibiotics under development is a cause of significant international concern. It is for this reason that the Prime Minister has asked Jim O’Neill, an economist of considerable international standing, to explore the actions which may be taken by governments around the world to stimulate and incentivise investment in new antimicrobial drugs.

Dr O’Neill will be looking at the full range of issues associated with the development, use and regulation of antibiotics and will be consulting with a wide range of international stakeholders including foreign governments, academia, NGOs and the biopharmaceutical industry. While this important work is going on the UK Government is working to build capability and capacity across the research and innovation sectors in a coordinated manner to be better placed to address the need for new antibiotics, therapies, diagnostics and novel treatments.

The UK has indicated that we are prepared to contribute some funding to work to work on the economic burden of AMR proposed by the World Bank.

d) What are concrete and measurable indicators of progress for this priority? (Including, for example, global and national goals to be achieved within 2, 5 and 10 years)
Within 5 years

- Develop economic models to encourage development of new antibiotics by 2019
- Reach an international consensus on how to resolve market failure (Global) by 2019
- Support work by World Bank on burden of AMR (Global) by 2019

Within 10 years

- Identify and bring to market a new class of antibiotic by 2024

Concluding questions

3. What contribution would your organization be able to make in implementing the global action plan?

Following the adoption of the WHO Resolution in May 2014, the UK is working with the WHO, WHO Member States and others to help develop the Global Action Plan, to which the UK AMR activities will be aligned.

The UK is leading (with others) the Action Package on AMR as part of the Global Health Security Agenda. We have ensured that the activities are aligned with the GAP and will contribute to supporting its implementation globally.

The UK is working closely with WHO and others to explore ways to develop appropriate mechanisms to promote the exchange of information and best practice on infection prevention and control (IPC), surveillance, stewardship and conservation – developing a culture of continuous learning and collaboration.

4. Additional input that you feel would be facilitate development of the GAP.

Following the publication of the GAP in 2015, we see value in a review of the GAP every two to three years, to assess progress and highlight areas of concern.

We regard an annual report to attract attention to GAP implementation and maintain momentum as essential – this could also be coordinated with the GHSA. Political commitment is required to tackle AMR in a co-ordinated manner.

Although all the building blocks are important, following this consultation exercise, we should look at which areas we should encourage Member States to focus on in order to gain maximum traction globally.
ANNEXES

1. Key action on MRSA
2. Data
3. Links to key documents
4. Improving Research
1. KEY ACTION ON MRSA – A DECADE

2001
Introduction of mandatory reporting of Meticillin-resistant Staphylococcus aureus (MRSA) bloodstream infections.

July 2004
Publication of *Towards cleaner hospitals and lower rates of infection*: This provides an action plan for cleaner hospitals and lower rates of infection.

It aimed to empower patients with more knowledge and encourage them to demand the highest standards of hygiene. It gave give matrons and nurses at ward level the practical advice and power to ensure high standards, and put cleanliness and the control of infection at the centre of inspection regimes.

October 2004
Matron’s charter sets out ten broad principles for delivering cleaner hospitals. It was aimed at all staff in the NHS, whatever their role, and was intended to be shared with patients and visitors, to involve them in plans for improvement and to gather their feedback.

January 2005
HCAI and Cleanliness Programme was established. The aim of the Programme was to support NHS organisations to reduce healthcare associated infections achieve reductions in levels of MRSA bacteraemia and improve public and patient confidence in the NHS. [The programme was later asked to take on the additional responsibility of supporting NHS organisations to achieve reductions in *Clostridium difficile* infections].

2008
Publication of *The Health and Social Care Act 2008*, and Code of Practice for the Prevention and Control of Healthcare Associated Infections, was updated to include registration requirements for NHS organisations.

January 2008
The announcement of the first national campaign (“Cleanyourhands”) to encourage healthcare staff to improve hand hygiene.

April 2009
Care Quality Commission begins operation. Part of the CQC’s remit is to check whether hospitals, care homes, GPs, dentists and services in your home are meeting national standards (including healthcare associated infections).

March 2012
Government announces plans for a “zero tolerance” for MRSA. It was proposed that all cases will involve a Post Infection Review (PIR) to identify why an infection occurred, and how future cases of infection can be avoided.

February 2013
The Department of Health Guidance "Prevention and control of infection in care homes - an information resource" is published in February 2013. The purpose of this measure is to stress that the protection of residents and staff in care homes from infection is an essential part of providing care. This is particularly important because of the vulnerability of older people sharing eating and living accommodation.

April 2013
A Post Infection Review (PIR) process is implemented for all MRSA bloodstream infection. The PIR standardises the analysis by which all healthcare providers assess when an MRSA infection occurred, under what circumstances it occurred, and the measures in place to prevent it reoccurring.

April 2013
A special focus on MRSA infections is specified within the Patient Safety Domain of the NHS Mandate.

In the 4 financial years 2010/11 to 2013/14 there have been 4,383 MRSA bacteraemia. In the four financial years prior to this (2006/07 to 2009/10), there were 15,667 MRSA bacteraemia.

This means there has been a 72% reduction. In other words, levels of MRSA bloodstream infections under the last 4 years have been only a third (actually 28%) of what they were in the previous 4 years.
## 2. DATA

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<td>2013-14</td>
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The successive 4 year reductions are 53% and 72%. 

![Graph showing MRSA bacteraemia in England (2001-02 to 2013-14)](image-url)
Recent 12 month trends in MRSA bacteraemia (all ages) and C. difficile cases (aged 2+)

Covering the 5 July to June periods

- MRSA
- CDI (aged 2+)

12 months ending in June of the shown year

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3. LINKS TO KEY DOCUMENTS

UK Strategy


Infection Prevention and control


Optimising prescribing


Initiatives to improve appropriate antibiotic prescribing in primary care

Tools for GPs


Scottish Reduction in Antibiotic Prescribing (ScRAP) Programme http://www.nes.scot.nhs.uk/media/2725088/nesd0189_scrap_guide_vfinal.pdf
Secondary care
Antimicrobial stewardship: Start smart - then focus
https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus

Antimicrobial stewardship: an evidence-based, antimicrobial self-assessment toolkit (ASAT) for acute hospitals http://www1.imperial.ac.uk/resources/F40CE444-9A71-4D5D-B985-1A909D3CE44F/9cookeetaljantichem.pdf

Antimicrobial stewardship in Scotland: impact of a national programme.
http://www.aricjournal.com/content/1/1/7

The Scottish Antimicrobial Prescribing Group, SAPG website also includes the annual reports detailing general progress.
http://www.scottishmedicines.org.uk/SAPG/SAPG_Reports

The Welsh Antimicrobial Resistance Programme, and following this, a delivery plan is in development. Further information is available on request
4. IMPROVING RESEARCH

Department of Health (DH) and Department for Business, Innovation & Skills (BIS) (through the Research Councils and Innovate UK (formerly TSB)) are working to strengthen EU and international AMR research collaboration, promoting inter-disciplinary working across professional boundaries to further support delivery of the science innovation and growth agenda which is needed to underpin new diagnostic and treatment breakthroughs.

In the first year they have developed and supported a range of new mechanisms to strengthen research capability and capacity and improve collaborative working, through the two newly established NIHR (National Institute for Health Research) Health Protection Research units on HCAI and AMR and the AMR research funders forum, managed by MRC. More information about the AMR research calls launched in this year can be found at:

http://www.themedcalls.nihr.ac.uk/amr/meet-the-programmes/phr-programme
http://www.mrc.ac.uk/research/initiatives/antimicrobial-resistance/

The UK has established an AMR Research Funders Forum (AMRFF).

The key aims of the AMRFF are to:

- Take a strategic view of the UK AMR research base with an understanding of its output, skill base, resources and impact
- Create a common vision for the future of AMR research and its implementation
- Add value to existing programmes of work through coordination, synergy of activities and gap awareness
- Coordinate and/or support the initiation of unilateral, bilateral or multilateral funding and delivery programmes
- Raise the understanding and profile of AMR research base in the UK and internationally through proactive communication with all stakeholders

Addressing the challenges – a thematic approach

Through the work of the AMRFF, four key themes have emerged that require a multidisciplinary approach and are considered essential to tackling AMR.

**Theme 1: Understanding resistant bacteria in context of the host**

Despite a strong basic bacteriology portfolio across the UK, funded through a number of sources, there are still many gaps in our understanding of the molecular and cellular biology of bacterial resistance, especially how bacteria evolve, acquire and transmit antibiotic resistance and how they adapt to life in human and animal hosts. This theme will aim to take a multidisciplinary approach to understand how resistance develops and is transmitted.

**Theme 2: Accelerating therapeutic and diagnostics development**

This theme will cover the discovery of new antibiotics as well as revisit old antibiotics with new scientific approaches to enhance their usefulness. It will also look to developing new, non-traditional antibiotic treatments. The science will build on discoveries made as part of theme 1 as well as on existing research programmes. This theme also emphasises the importance of developing new technologies for identifying resistant bacteria, to underpin diagnostics development and so better target any new therapies. Finally, the research in this theme may provide a real-life test bed studying the impact of different economic and
business models, or development of novel business models, related to the process and drivers of innovation in the development of new antibiotics and diagnostics.

**Theme 3: Understanding the real world interactions**
It is clear that the environment, and the way people and communities interact with the environment, hugely influences the way bacteria behave and the transmission of genes within and between bacterial species. A greater understanding of how differing environments and their uses influence the evolution, acquisition and spread of antibiotic resistance and reservoirs of resistance is therefore needed. Here the “environment” is seen in its broadest sense from host tissues to man-made settings and natural environments. This would encompass, for example, human and animal intestinal tracts, wounds in humans and animals, hospitals, care homes and transport systems, all the way through to waste water, agricultural and natural environments (freshwater, marine, soil, air, etc. and their interfaces). Understanding these environments and their role in resistance will help identify and target better prevention measures and management practices.

**Theme 4: Behaviour within and beyond the health care setting**
This theme will aim to elucidate the underpinning motivations for human behaviours relating to AMR, and how behaviour can affect development and spread of antibacterial resistance. It will also explore how to best enable effective behaviour change interventions in a variety of settings, relevant to both humans and animals. It may also serve as the basis for research into the economics of AMR.

The research councils are now launching initiatives, ring fencing funds from current headroom, to address these themes. MRC and BBSRC are investing £20m in themes 1 and 2 and calls have now been launched. EPSRC, recognising the important role that engineering and physical sciences can play in this challenge, are investing £5m to encourage universities to build capacity and understanding through multidisciplinary networks focussed on the four key themes identified. Themes 3 and 4 are in development and NERC and ESRC are playing a key role in shaping future calls in consultation with other potential partners, including BBSRC, MRC, EPSRC and AHRC. All funding will be reviewed for scientific excellence by expert panels, consisting of both international leading academics and relevant industry. The initiative will be overseen by a specialist steering group of national, international and private sector experts.

**Veterinary references**

The British Veterinary Association (BVA), the British Small Animal Veterinary Association (BSAVA), and the British Equine Veterinary Association (BEVA) have all published information to guide prescribing and use of antimicrobials in veterinary practice.

http://www.bva.co.uk/activity_and_advice/antimicrobials.aspx

http://beva.org.uk/useful-info/Vets/Guidance/AMR


The Veterinary Medicines Directorate has published a position statement on responsible antibiotic use under the cascade: http://www.vmd.defra.gov.uk/pdf/cascade.pdf.
Published UK data on UK sales of veterinary antibiotics and sensitivity of bacteria of veterinary origin, (UK VARSS report):